

**WHAT IS CLAIMED IS:**

1. A corneal implant comprising a membrane, said membrane comprising a biological polymer and a polyacrylamide.
- 5 2. The implant of claim 1, wherein the polyacrylamide is a poly(N-alkylacrylamide).
3. The implant of claim 1, wherein the polyacrylamide is poly(N-isopropylacrylamide).
4. The implant of claim 1, wherein the biological polymer 10 is selected from the group consisting of collagen, fibrin-fibrinogen, gelatin, glycoprotein, peptide, glycosaminoglycan, elastin and mixtures thereof.
5. The implant of claim 4, wherein the collagen is selected 15 from the group consisting of telocollagen and atelocollagen.
6. The implant of claim 4, wherein the collagen is a type I collagen.
7. The implant of claim 4, wherein the collagen is selected 20 from the group consisting of recombinant collagen and collagen from a natural source.
8. The implant of claim 1, wherein the biological polymer and polyacrylamide are present in a ratio of about 0.2:1.0 (w/w) to about 1.0:0.2 (w/w) biological polymer:polyacrylamide.
- 25 9. The implant of claim 8, wherein the biological polymer and polyacrylamide are present in a ratio of about 0.3:1.0 (w/w) biological polymer:polyacrylamide.
10. The implant of claim 1, wherein said membrane further comprises a chemical crosslink.
- 30 11. The implant of claim 10, wherein the crosslink is obtained by crosslinking with a crosslinking agent selected from the group consisting of (a) a carbodiimide

crosslinking agent; (b) an N-hydroxysuccinimide; and (c) both (a) and (b).

12. The implant of claim 11, wherein the carbodiimide crosslinking agent is 1-(3-dimethylaminopropyl)-3-ethyl carbodiimide.
13. The implant of claim 1, wherein the membrane has a thickness of about 20  $\mu\text{m}$  to about 400  $\mu\text{m}$ .
14. The implant of claim 13, wherein the membrane has a thickness of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ .
15. The implant of claim 1, wherein said implant comprises a plurality of membranes, wherein at least one of said plurality of membranes comprises a biological polymer and a polyacrylamide.
16. A method for preparing the corneal implant of claim 1, the method comprising:
  - (a) providing a polymer mixture solution comprising a biological polymer and a polyacrylamide;
  - (b) transferring said solution onto a drying surface;
  - (c) allowing said solution to dry to obtain a membrane for use in said corneal implant.
17. The method of claim 16, wherein the biological polymer is collagen.
18. The method of claim 16, wherein the polyacrylamide is poly(N-isopropylacrylamide).
19. The method of claim 16, wherein the drying surface is selected from the group consisting of a plastic dish and a mold.
20. The method of claim 16, wherein said method further comprises a crosslinking step using a crosslinking agent.
21. The method of claim 20, wherein the crosslinking agent is selected from the group consisting of (a) a

carbodiimide crosslinking agent; (b) an N-hydroxysuccinimide; and (c) both (a) and (b).

22. The method of claim 21, wherein the carbodiimide crosslinking agent is 1-(3-dimethylaminopropyl)-3-ethyl carbodiimide.
23. The method of claim 16, wherein the implant comprises a plurality of membranes, wherein at least one of said plurality of membranes comprises a biological polymer and a polyacrylamide, wherein the method further comprises layering together a plurality of the membranes obtained.
- 10 24. The method of claim 23, further comprising crosslinking the membranes to each other.
25. A method of treating a condition characterized by a corneal defect, said method comprising applying the implant of claim 1 to said subject.
- 15 26. The method of claim 25, wherein said subject is human.
27. A commercial package comprising the implant of claim 1, together with instructions for treating a condition characterized by a corneal defect.